AUSTRALIAN ENERGY COUNCIL

30th April 2021

Submitted online to: rez@planning.nsw.gov.au

Dear Sir/Madam

CWO REZ Access Scheme Issues Paper

The Australian Energy Council (the "**AEC**") welcomes the opportunity to make a submission in response to the Issue Paper on the Access Scheme to the proposed Central-West Orana Renewable Energy Zone (the "**REZ**").

The AEC is the industry body representing 21 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate the overwhelming majority of electricity in Australia, sell gas and electricity to over ten million homes and businesses, and are major investors in renewable energy generation.

The AEC supports the consultative approach adopted for the REZ access scheme and welcomes further engagement as the model for this and other REZs progress.

Introduction

The AEC has a long-standing view that transmission development should subject to the cost-benefit principles enshrined in the Regulatory Investment Test for Transmission ("**RIT-T**"), guided by the Integrated System Plan ("**ISP**") and ultimately carried out by the local network provider under National Electricity Rules frameworks. The AEC recognises however that the NSW roadmap legislation empowers the development of a REZ in a separate process. Having noted that concern, the AEC welcomes the government's attempts to adopt features from the Energy Security Board's ("**ESB**")'s recent papers on REZs.

In recent submissions to the ESB's papers on REZs[1], the AEC expressed concern about the application of distinct rules to apply to a subset of network assets, which will introduce boundary issues and complexities in the planning and operation of the broader shared network. On reflection of these matters, the AEC concluded that the REZ concept was valuable to help discriminate areas of focus to the planners of the shared network, especially during preparation of the ISP, but doubted whether network assets that happen to be defined as REZ assets should be subject to distinct rules, such as unique access regimes.

Nevertheless the AEC recognises that the NSW roadmap legislation anticipates the minister declaring a REZ and applying an access regime. In this submission the AEC engages with that expectation.

Interaction with other parts of Roadmap

The Roadmap has many interacting parts, for example the planning of REZs, the planning of the shared network, the allocations of Long-Term Energy Supply Agreements ("**LTESA**")s and REZ access arrangements. It is difficult to contemplate the issues with respect to one of these elements without a full appreciation of the whole.

[1] https://www.energycouncil.com.au/media/n2bncjmh/20200908-aec-rez-planning.pdf and https://www.energycouncil.com.au/media/cv5fnvck/20210212-aec-rez-submission.pdf

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In particular, the REZ access arrangement design is being progressed ahead of the design of the LTESA. This creates challenges as the LTESA itself will affect the way LTESA generators interact with the REZ and its access arrangement. For example a LTESA that immunises a generator from the effects of congestion, or the payment of compensation to other REZ generators, would remove the incentives to seek firm access to a REZ.

These sequencing complexities could have been identified by stakeholders if the Roadmap's consultation plan had itself been consulted. Nevertheless the AEC recognises the government's desire to progress construction on the Central-West Orana REZ immediately and has prioritised design of its access arrangement ahead of the LTESA. Given that, it is necessary for the government to now clarify some of the LTESA's high level structure, especially how it will operate with respect to connection, losses and congestion, before progressing this access arrangement design.

Defining access to specific network assets

Notwithstanding the misgivings expressed earlier at applying unique rules to a subset of assets in the shared network, the AEC recognises the theoretical appeal of an access regime. There are clearly attractions in having network users contribute to expansions in the network developed primarily for their benefit, and, in return, such users having confidence in retaining beneficial use of that network.

There are however great challenges in defining access to certain generators over certain assets within a National Electricity Market ("**NEM**") that globally operates with undefined access, which AEC discussed at length in its ESB submission[2].

The Paper identified overseas examples, such as that applicable to Texas. As that market already operates on Locational Marginal Pricing ("**LMP**") and Financial Transmission Rights ("**FTR**") it is quite straightforward to recognise access over a part of network through the allocation of specific FTRs across LMP points.

The non-LMP examples identified either provide:

- A physical access right, recognised through a right to connect and dispatch congestion priority; or
- A financial right, recognised through compensation for curtailment when it occurs.

It should be noted however that the non-LMP examples are effectively providing access to the entire network. It is not clear that any non-LMP market has ever attempted to provide an access priority to a subset of the network.

Another non-NEM example that should be considered is the Wholesale Electricity Market ("**WEM**") of Western Australia. The WEM operates with a global physical firm access arrangement where generators are not permitted connection unless the generator has arranged and funded sufficient network such that its maximum output will not impair any existing generator when the network is in a "system normal" condition. This has some similarities to the characteristics of Option 1 in the Paper – noting however the WEM access reaches all the way to the load centre.

The WEM's arrangement has been widely criticised as slow, inefficient and a barrier to renewable energy development. Renewable energy may not require the same confidence of access as traditional generation, so it is reasonable to ask if it should be required to invest in such a high standard. As a result of these criticisms the WEM is moving away from this model to one of "constrained access". In this model physical congestion is acceptable, but those generators who

[2] https://www.energycouncil.com.au/media/cv5fnvck/20210212-aec-rez-submission.pdf

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presently enjoy firm access will in future have their rights recognised financially, in the WEM's case this will be through priority to capacity payments.

Losses

The paper refers to variations in Marginal Loss Factors ("**MLF**"s) as a significant risk to generators in the NEM's undefined access regime and appears desirous of providing MLF protection. However none of the options proposed or discarded are capable of doing this. This is not surprising: unlike (system normal) congestion, with losses there is no "winner" who can compensate a "loser[3]".

In any case, the predominant determinant of MLFs for generators on the REZ will be the resistances on the lines outside the REZ, which carry power over long distances to customers in NSW (and potentially other regions). With such large quantities of correlated generation entering relatively small pockets of the network, it seems inevitable that MLFs for generators in the REZ will substantially decline as it develops.

It would be best if the NSW government clarified early to investors that it does not intend to provide MLF protection in the access arrangement or LTESA, and it should commission technical studies to forecast the MLFs likely to apply once the REZ is fully utilised. Thus investors will take them into account up front and will not suffer the "surprise" that has created so much commentary on MLFs.

Connecting Technologies

The Paper is presented with respect to the connection of solar, wind, storage and new loads. It is not clear whether the REZ would permit connection of other technologies, in particular gas or liquid-fuelled peaking generation. Peaking generation in the REZ could be beneficial as its dispatch would be negatively correlated with renewable generation and an access arrangement would therefore support an amount of peaking generation to connect without requiring an increase in the REZ size.

Preferred Access Regime

Determining an appropriate access regime is a challenging task in any electricity market, and in the NEM has proved particularly controversial and difficult to resolve. Whilst recognising and supporting the NSW governments' intentions of providing an access regime, AEC members have varying preferences between:

1. No long-term access rights, at least with respect to congestion
2. Physical access rights as per Option 1; and
3. Financial access rights as per Option 2.

No congestion access rights

This view considers it may be possible to develop REZ's with respect to the sequencing and technical aspects of connection only. For example, REZ connectors who have contributed to REZ costs would be able to connect first, and with a lower standard of equipment[4] with these system support services instead provided centrally by the REZ sufficient to support a pre-determined capacity of connectors.

Meanwhile, non-contributing generators would be subject to the requirements of the rules' automatic technical standards, and/or do no harm provisions as they are for generators connecting outside the REZ. They would also be subject to a degree of queuing, having to connect after the foundation connectors, and necessarily awaiting the REZ operator's confidence in their meeting of the technical requirements.

[3] For a deeper discussion of this see https://www.energycouncil.com.au/analysis/marginal-loss-factors-will-someone-please-repeal-the-laws-of-physics/

[4] E.g. with respect to provision of voltage control and system strength

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In this no access rights option, outside these technical matters, volumes in terms of connecting megawatts would not be limited, and resulting congestion would remain managed by AEMO in the standard manner as applies to the broader network.

This model may seem to provide a relatively low level of advantage to generators who have funded a REZ. However delays and costs associated with these technical matters have proven very challenging for connectors in the shared network, and being able to quickly avoid them entirely could alone prove a substantial incentive to contribute to REZ costs.

Physical Access Rights
The AEC notes the learnings in respect of the WEM's application of physical rights, in particular the potential for inefficiency where some generators don't necessarily require 100% firmness for all circumstances, yet the network must be built as if they do.

The AEC recognises the attraction to the apparent simplicity of this approach but also notes some doubt in this regard. The technical assessment of what is allowed to connect in a physical access arrangement is itself very complex and performed by the REZ manager centrally. Speaking from WEM experience, these judgements are necessarily opaque and can appear arbitrary to generators seeking connection. Thus the appearance of simplicity may be just an outcome of the arrangement's opaqueness, i.e. the complexity occurs behind closed doors in the REZ manager rather than in an access auction.

Transferability can be difficult in a physical regime, as the REZ operator must determine whether the re-assignment is technically like-for-like. Again this is necessarily opaque, and appear arbitrary both to the parties desirous of the transaction, along with other parties suspicious of being adversely affected by the transfer.

Financial Access Rights
In its submission to the ESB[5], the AEC favoured the Financial Access Protection Model, if its implementation challenges can be overcome. Financial arrangements are likely to be the most efficient, provide more flexibility for participants to determine and value their own access, and are less reliant on central decisions.

In some ways financial access is less complex than physical access. The challenging questions about technology quotas and nameplate capacity are not relevant – participants make their own choices when they bid for financial access.

Within the Paper's Option 2, the AEC strongly supports 2B over 2A because it provides connector flexibility and greater efficiency. It also requires less central decision making – optimising of access by technologies occurs via the expression of generators' auction bids at different times of the day.

The AEC disagrees with the paper that 2B is more complex than 2A simply because it subdivides access temporally. Where a generator is seeking 24 hour access, this can readily be facilitated by applying the "linked bid" logic in an access auction as is used by AEMO in its Settlement Residue Auctions. Bidding in such a way is no more complex than bidding for purely full time instruments.

It is not clear why it is proposed that Tier 2 financial access rights would need to be capped[6]. Non-firm rights are typically unlimited in an access regime, which means a non-firm generator faces full congestion risk, as a consequence of not contributing to network costs. Putting a cap on Tier 2 rights effectively grants such generators a partially-firm right, which may mean it is over-subscribed and itself requires auctioning. It also leads to a complex investment choice as to which Tier to choose against likely auction prices.

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[5] https://www.energycouncil.com.au/media/cv5fnvck/20210212-aec-rez-submission.pdf
[6] Issues paper, Page 26.

The comments above refer to congestion, but it would however be appropriate to apply a form of system security limitation to Tier 2 generators, e.g. if there is inadequate system strength provided in the REZ to accommodate it, a connecting Tier 2 generator would have to self-remediate. This should not however be expressed as a "cap".

Load

There are certainly attractions in locating load within a REZ, which would offset its surplus of generation. The following benefit mechanisms are suggested:

- Load could benefit, and provide benefits to generators, through exposure to the locational marginal price[7] within the REZ. In Option 2 this can readily be achieved by allocating the load a firm access quantity of zero MW, and then treating its load as negative generation in the compensation scheme alongside firm and non-firm generators. During congestion, non-firm generation would then compensate the load to the level of its consumption.
- As the REZ has been built for generation, and the load's presence should actually lessen rather than increase global network costs, it could be partially exempted from Use of System ("**UoS**") charges: the share of UoS that relates to invested capital (as opposed to operational expenses).

For loads to get the benefits described above however, it is critical that their consumption is discretionary, not unlike generation. In this regard it would be necessary to require the loads:

- To become *scheduled loads*, providing a continuous demand-side bid, and be subject to congestion constraint themselves when necessary.
- To be *interruptible* in that during state-wide shortfall (e.g. when general demand is high and solar and wind are near zero), they can be immediately curtailed and are not entitled to compensation, nor is their curtailment to be considered Unserved Energy.

Some loads that the government is keen to encourage, such as electrolytic hydrogen, could readily operate under such rules, in return for the lower energy costs that participating in the REZ compensation scheme could permit.

Storage

Having determined the preferred access regime for generators and for discretionary loads as described above, then there is no need for a specific access category for storage. Storage can be treated as a discretionary load in the charging cycle as described above, and can bid for generator access in the discharge cycle.

A financial access regime would be best suited to storage: its characteristics suggest non-firm generator access would be appropriate, as it would time its discharge at periods when other REZ user output is low.

Rights Ownership

Transferability

Rights should be fully transferable between parties in order to achieve allocative efficiency. In the financial regime this should be straightforward and could even be facilitated by the REZ manager conducting periodic 2-way auctions.

Use it or lose it

Concerns regarding speculative hoarding are often raised in the context of access regimes, but actual international experience shows these concerns are typically exaggerated. As long as the rights are easily transferrable, the government should be confident that the rights will ultimately end

[7] For the avoidance of doubt, this is a reference to the locational marginal price with respect to the REZ's gates, not the Regional Reference Node.

up in the hands of those that can make the greatest use of them. In that regard there seems no need for use it or lose it provisions.

Indeed a period of holding dormant rights can be quite efficient, giving an investor a window to determine the nature of its generation investment and the optimal timing of its construction. A legitimate result of that analysis could be to not go ahead and to sell the rights to a better placed party. A threat of rights being extinguished in this situation will distort such decisions.

It is possible that the REZ rights could be offered earlier than generators are ready to purchase them, in which case they may realise a low value at auction. It is not clear how realistic this is, but could be resolved through use of a reserve price.

Tenor
The AEC considers the tenor of the rights should be of a substantial length in order to provide investor confidence. However excessively long rights may become difficult to support as conditions change, e.g. if new network configurations or load patterns develop. There will be a need to periodically refresh the rights. A period in the order of 15 years is suggested, noting that subsequent auctions should be held at least a year ahead of the new period in order to allow participants to react and potentially re-trade.

Conclusions
Whilst the AEC does not support state-based variations from national frameworks, it nevertheless appreciates the NSW government's attempts to introduce a pragmatic access regime on the REZ and its attempts to take into account the ESB's recommended REZ framework.

The AEC notes that introducing an access regime, notwithstanding its virtues, will be technically very challenging within a network that is generally subject to undefined access.

AEC members have a range of views on the preferred access regime and have put forward an additional option which confers a system security and connection queuing right but not a congestion right.

The AEC is most attracted to Option 2B. Financial access, determined through a granular auction, has clear efficiency advantages over physical access. The AEC does not consider it more complex than physical access, and is more transparent.

Within a financial access regime, loads and storage can readily be incorporated as negative generation, without requiring any special rules.

The AEC supports full transferability, no "use it or lose it" provisions and a long, but not unlimited, tenor.

Any questions about this submission should be addressed to the writer, by e-mail to Ben.Skinner@energycouncil.com.au or by telephone on (03) 9205 3116.

Yours sincerely,

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